



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,312	06/08/2001	Christophe Serbutoviez	PHN 16, 199B	9784
24737	7590	03/30/2006	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510			HON, SOW FUN	
			ART UNIT	PAPER NUMBER
			1772	
DATE MAILED: 03/30/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/877,312

Applicant(s)

SERBUTOVIEZ ET AL.

Examiner

Sow-Fun Hon

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5 and 7-9 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/013,546.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Prosecution Reopened After Board Decision***

***Withdrawn Rejections***

1. The 35 U.S.C. 103 (a) rejection of claims 5, 7-9 over Masayuki (JPO Machine English Translation of JP 05019240) has been withdrawn due to the decision by the Board of Appeals and Interferences, dated 02/28/06.

***New Rejections***

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 5, 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakatani (US 5,378,391), as evidenced by Iwanaga (US 2005/0200796 A1) and Chemistry Related (retrieved from the internet).

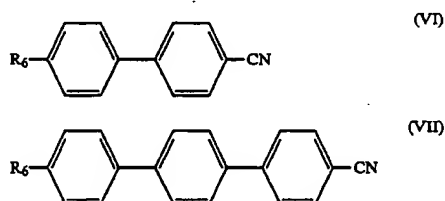
Regarding claim 5, Nakatani teaches a polymerizable mixture which comprises reactive monomers (column 4, lines 6-15) and a photoinitiator (column 8, lines 28-32), characterized in that the mixture contains two types of reactive monomers, the first type being an ethoxylated acrylate (p-nonylphenoxy-octaethylene oxide acrylate, column 5, lines 25-30) and readily miscible with a liquid crystal material (has surface activity with a

Art Unit: 1772

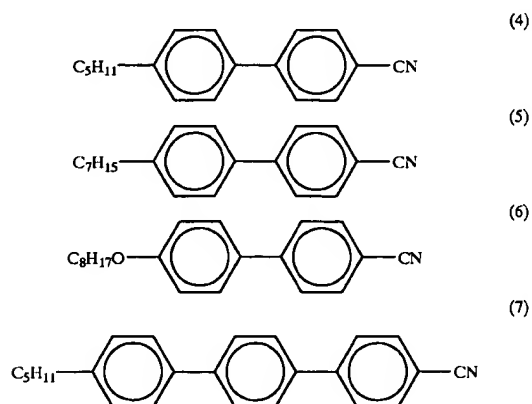
hydrophobic long-chain alkyl moiety and a hydrophilic terminal hydroxy moiety, column 4, lines 21-25), as evidenced by Chemistry Related.

Chemistry Related teaches that hydrophilic and hydrophobic compounds are immiscible with each other (just don't mix, How does Soap Work?, 1<sup>st</sup> paragraph), but that a compound with both properties of hydrophobic (non-polar) and hydrophilic (polar) molecules, functions as an emulsifier or surfactant, being readily miscible with both the hydrophobic molecules and the hydrophilic molecules (capable of dispersing one liquid into another immiscible liquid, How does Soap Work?, 2<sup>nd</sup>-3<sup>rd</sup> paragraphs).

Nakatani teaches a liquid crystal (cyanobiphenyl-type liquid crystal compound, column 9, lines 5-7, 17-26), shown below as compounds (VI-VII), which are hydrophobic, as evidenced by Iwanaga.



Iwanaga teaches that cyanobiphenyl-type liquid crystal compounds are hydrophobic (column 3b, section [0044]) with structures (4-7) shown below.



Art Unit: 1772

Thus, the surface-active ethoxylated acrylate with hydrophobic moiety (nonylphenol-n-ethylene oxide acrylate, column 11, lines 20-23) is readily miscible with the hydrophobic cyanobiphenyl liquid crystal in the mixture of Nakatani (column 11, lines 20-30).

Nakatani teaches that the second type of monomer is a hydrophilic monomer (2-hydroxyacrylate, column 11, line 23), which is poorly miscible with the hydrophobic liquid crystal. Nakatani teaches that the two types of reactive monomers are non-volatile (coating solution is heated to 86 °C for 10 minutes, column 14, lines 8-10), and that the polymerizable mixture is suitably used in a polymer-dispersed liquid crystal (liquid crystal film with the liquid crystal phase dispersed in a resin matrix, column 2, lines 18-21) cell (held between opposite electrode substrates, column 10, lines 16-18).

Regarding claim 7, Nakatani teaches that the quantity of each of the two types of monomers is at least 20% by weight, calculated with respect to the overall quantity of both types of monomers ( $[7/(28 + 7)] \times 100$ , column 11, lines 60-65).

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatani (US 5,378,391), as evidenced by Iwanaga (US 2005/0200796 A1) and Chemistry Related (retrieved from the internet).

Nakatani, as evidenced by Iwanaga and Chemistry Related, teaches a polymerizable mixture comprising two types of non-volatile reactive monomers, the first

Art Unit: 1772

type of monomer being an ethoxylated acrylate and readily miscible with a liquid crystalline material and a second type of monomer being poorly miscible with said liquid crystalline material, as described above. In addition, Nakatani teaches that the liquid crystalline material is added to the mixture in a quantity of 40-80% by weight (column 2, lines 53-56), which overlaps the claimed range of 70-90% by weight, and that the quantity is not strictly limited but can vary with the usage of the liquid crystal display device (content of the liquid crystal droplets, column 2, lines 50-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have added the liquid crystalline material in the quantity of 70-90% by weight, to the mixture of Nakatani, in order to provide the desired properties for the desired use of the liquid crystal display device, as taught by Nakatani.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatani (US 5,378,391), as evidenced by Iwanaga (US 2005/0200796 A1) and Chemistry Related (retrieved from the internet), in view of Mori (US 5,359,441).

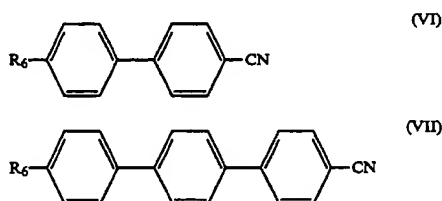
Nakatani teaches a display device comprising: a polymer-dispersed liquid crystal (liquid crystal film with the liquid crystal phase dispersed in a resin matrix, column 2, lines 18-21) cell (liquid crystal film held between a pair of opposite electrode layers, column 10, lines 22-30), characterized in that the cell is manufactured from a mixture, which predominantly comprises a liquid crystalline material (65 wt. %, column 11, lines 60-65) as well as two types of reactive monomers, the first type being an ethoxylated acrylate (p-nonylphenoxy-octaethylene oxide acrylate, column 5, lines 25-30) and readily miscible with the liquid crystal material (has surface activity with a hydrophobic

Art Unit: 1772

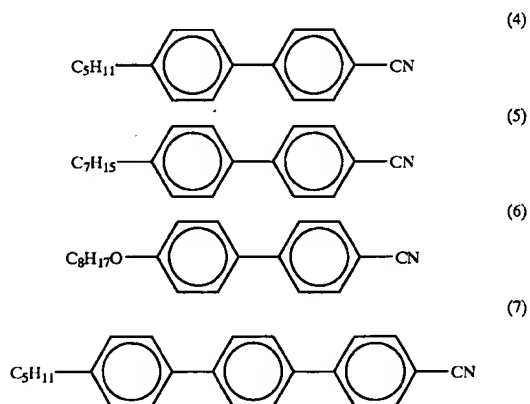
long-chain alkyl moiety and a hydrophilic terminal hydroxy moiety, column 4, lines 21-25), as evidenced by Chemistry Related.

Chemistry Related teaches that hydrophilic and hydrophobic compounds are immiscible with each other (just don't mix, How does Soap Work?, 1<sup>st</sup> paragraph), but that a compound with both properties of hydrophobic (non-polar) and hydrophilic (polar) molecules, functions as an emulsifier or surfactant, being readily miscible with both the hydrophobic molecules and the hydrophilic molecules (capable of dispersing one liquid into another immiscible liquid, How does Soap Work?, 2<sup>nd</sup>-3<sup>rd</sup> paragraphs).

Nakatani teaches liquid crystal (cyanobiphenyl-type liquid crystal compound, column 9, lines 5-7, 17-26), shown below as compounds (VI-VII), which are hydrophobic, as evidenced by Iwanaga.



Iwanaga teaches that cyanobiphenyl-type liquid crystal compounds are hydrophobic (column 3b, section [0044]) with structures (4-7) shown below.



Art Unit: 1772

Thus, the surface-active ethoxylated acrylate with hydrophobic moiety (nonylphenol-n-ethylene oxide acrylate, column 11, lines 20-23) is readily miscible with the hydrophobic cyanobiphenyl liquid crystal in the mixture of Nakatani (column 11, lines 20-30).

Nakatani teaches that the second type of monomer is a hydrophilic monomer (2-hydroxyacrylate, column 11, line 23), which is poorly miscible with the hydrophobic liquid crystal. Nakatani teaches that the two types of reactive monomers are non-volatile (coating solution is heated to 86 °C for 10 minutes, column 14, lines 8-10). The mixture is sandwiched between two substrates (coating solution is held between the two substrates, column 11, lines 30-35), which are provided with an electrode layer (column 10, lines 39-40), and whereafter the mixture is polymerized under the influence of radiation (column 11, lines 30-35). Nakatani fails to teach that the polymer-dispersed liquid crystal cell further comprises a matrix of individually drivable rows and columns of electrodes as well as means for driving these electrodes.

However, Mori teaches that a display device comprising a polymer-dispersed liquid crystal cell (panel, abstract), which comprises a matrix of individually drivable rows and columns of electrodes (electrodes 27 are provided parallel to each other in the row direction of the matrix, column 3, lines 20-25) as well as a means for driving these electrodes (employs a TFT structure to accomplish active matrix driving, column 3, lines 15-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a matrix of individually drivable rows and columns of electrodes as well as means for driving these electrodes, in the polymer-



Art Unit: 1772

dispersed liquid crystal cell of Nakatani, for the purpose of providing the desired active matrix driving of display device, as taught by Mori.

***Allowable Subject Matter***

5. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. US 5,378,391 fails to teach or suggest, even in view of US 5,359,441 or JPO website Machine English Translation of JP 05019240, the combination of a polymerizable mixture of reactive monomers and a photoinitiator, characterized in that the mixture contains two types of non-volatile reactive monomers, the first type of monomer being an ethoxylated alkyl-phenolacrylate whose alkyl group comprises at least five carbon atoms, and readily miscible with a liquid crystalline material and the second type of monomer being an alkylacrylate whose alkyl group comprises at least 8 and maximally 18 carbon atoms, and poorly miscible with said liquid crystalline material. US 5,378,391 teaches the ethoxylated alkyl-phenol acrylate whose alkyl group comprises at least five carbon atoms (nonylphenol-n-ethylene oxide acrylate, column 11, lines 20-21), but none of said references above teach an alkylacrylate whose alkyl group comprises at least 8 and maximally 18 carbon atoms, and is poorly miscible with the liquid crystalline material which is readily miscible with the ethoxylated alkyl-phenol acrylate whose alkyl group comprises at least five carbon atoms.

Art Unit: 1772

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*S. Hon.*

Sow-Fun Hon

*03/24/06*

*[Signature]*  
HAROLD PYON  
SUPERVISORY PATENT EXAMINER  
*1772*

*3/27/06*